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# PATENT SPECIFICATION

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Index at acceptance:—Class 39(iii), H1(gx: x), H2e4(g1: h).

## COMPLETE SPECIFICATION

## Improvements in Electrically Heated Furnaces for Drawing Glass and Analogous Plastic Materials

I, PERCY HADDAN, a British Subject, of the firm of Herbert Haddan & Co., of 31 & 32, Bedford Street, Strand, London, W.C.2, do hereby declare the nature of this invention, a communication to me from abroad by Sklarny a Rafinerie, Drive Josef Riedel, Narodni Podnik, a Czechoslovakian Company, of Dolni Polubny, Czechoslovakia, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Hitherto gas heating has been used in the known process of drawing threads from glass rods or tubes. Even if relatively favourable results have been obtained with this kind of heating, the threads thus obtained are not of the requisite quality to make it possible for them to be used for further purposes (for twisting into yarn for example). In particular it has not been possible in this kind of heating to procure a continuous uniform heat source.

This continuous uniform heat source is an absolute necessity if a greatest possible number of rods are to be arranged next to each other and the work done with an ideal spinning point (that is to say change from rod to thread).

It is also known to draw threads from glass rods by using electrical resistance heating, in which each single glass rod is enclosed in a special heating spiral or coil.

In the above apparatus very fine, uniform threads are obtained, it is true, but the apparatus has other disadvantages.

Apart from a large consumption of current a large space is necessary, the several glass rods being at greater distance from each other than necessary for the drawing process, so that the space on the drawing and winding drums is not fully utilized.

With the electrically heated furnace according to the present invention it is, however, possible not only to procure a continuous uniform heat source with the greatest possible equality of temperature in the furnace but also to arrange the rods at only a small distance apart, if the heating coils are disposed according to the present invention. With this apparatus threads of a quality, scarcely attainable hitherto, i.e. fineness and uniformity, can be produced.

The invention thus relates to electrically heated furnaces for the production of threads from rods or tubes (rods or hollow rods) of glass or analogous plastic materials introduced into the furnaces and the inventive idea is seen in the fact that the heating coils are not carried around the glass rods but lie horizontally next to each other and the glass rods are conveyed through the gap formed between the coils.

In the accompanying drawing, Figs. 1 and 2 are sections at right angles to one another of such a furnace.

In a ceramic furnace body 3 are two resistance coils 1, so arranged in an annular holding piece 2 that a narrow gap remains between them.

A continuous and uniform heat source is formed between the coils. The rods or tubes 4 are introduced through a guiding piece 5 made of ceramic or metallic material. In order to prevent sticking in the guiding piece 5 and to obtain a uniform pre-heating, that is to say an ideal spinning point, the heating chamber has a roof-like slope and is widened downwards in the direction of feed.

The ceramic holding pieces 2 are heart-like in cross-section and are slotted above on the insertion side and in the delivery region. The ceramic holding pieces 2 have abutting ends and can be arranged next to each other in any number.

The separation of the individual inserted rods in this kind or arrangement is only limited by mechanical influences of the drawing process so that they can be arranged quite close to each other.

[Price 2/-]

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An electrically heated furnace (drawing furnace) for the drawing of threads from rods or tubes of glass or analogous plastic materials which are plastic in heat, characterized by two parallel electric heating coils arranged to constitute between them a continuous and uniform heat source for the rods or tubes, which in any desired number lie next to each other and are conveyed through the gap formed between the coils so that they may be drawn into fine threads according to known processes.

2. Electrically heated furnace according to claim 1, characterized in that the two parallel electric heating coils are in a chamber having a roof-like slope widened downwards in the direction of feed.

3. Electrically heated furnace according to claim 1 and 2, characterized in that ceramic holding pieces for the electric heating coils are of heart-like shape in cross-section and are slotted above on the insertion side and in the delivery region.

Dated this 12th day of March, 1948.
For the Applicant,
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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig.1.

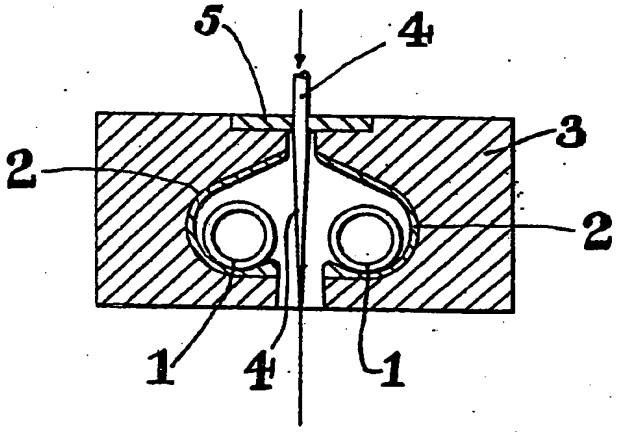
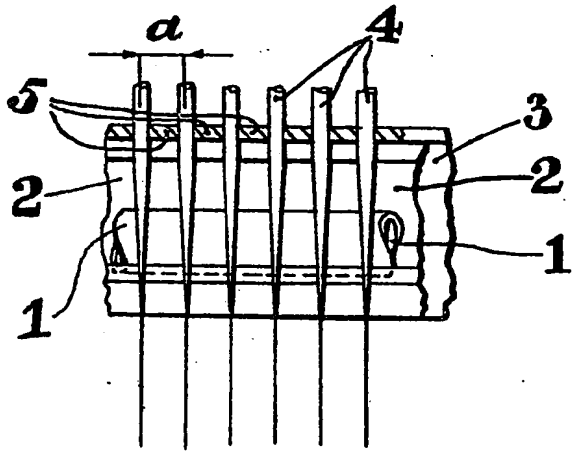



Fig.2.




H.M.S.O. (Ty.P.)